

REMARKS

Claims 1, 4-8 and 17 are presented for consideration, with Claim 1 being independent.

Editorial changes have been made to the specification.

Independent Claim 1 has been amended to further distinguish Applicants' invention from the cited art. In addition, editorial changes have been made to selected claims, and Claim 17 has been added to provide an additional scope of protection. Claims 2, 3 and 9-16 have been cancelled.

Initially, Claims 2, 3 and 15 were rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. Without conceding to the propriety of this rejection, Claims 2, 3 and 15 have been cancelled. This rejection is therefore deemed to be moot and should be withdrawn.

Claims 14 and 15 were rejected under 35 U.S.C. §112, second paragraph, as allegedly being incomplete for omitting essential elements. Without conceding to the propriety of this rejection, Claims 14 and 15 have been cancelled. This rejection is therefore deemed to be moot and should be withdrawn.

Claims 4 and 13 were objected to because of a minor informality as discussed on page 3 of the Office Action. Claim 4 has been amended in response to this objection, and Claim 13 has been cancelled.

Claims 1-3 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Clark '977. In addition, Claims 1-13 stand rejected under 35 U.S.C. §103 as

allegedly being obvious over Chow '690 in view of Clark. These rejections are respectfully traversed.

Claim 1 of Applicants' invention relates to a fluid delivery device comprising a flow channel formed on a substrate, and valves for controlling a flow of a fluid in the flow channel. The flow channel comprises a first flow channel, a second flow channel branched from the first flow channel, a third flow channel connected to the first flow channel, and a fourth flow channel in communication with the second flow channel by way of the first flow channel. Claim 1 also features a first valve formed in a second flow channel being a check valve that allows invariably a flow toward the first flow channel and intercepts a flow in a reverse direction, or a threshold valve that allows invariably a flow toward the first flow channel, and in the reverse direction operates in accordance with a pressure difference between an upstream and a downstream side of the first valve caused by the flow of the fluid, allowing the fluid to flow when the pressure difference is lower than a prescribed value P_0 , and intercepting the fluid not to flow when the pressure difference is P_0 or more. In addition, a second valve is formed in a fourth flow channel as a threshold valve. As claimed, the first valve and the second valve each have a layer and control the flow of the fluid in the second and fourth flow channels by elastically deforming the layer on the substrate. The fluid introduced from the second flow channel toward the fourth flow channel and located in the first flow channel and also between the first valve and the second valve is delivered toward the third flow channel.

Support for the amendments to the claims can be found, for example, on page 11, line 22, *et. seq.*, of the specification. In accordance with Applicants' invention, a high performance fluid delivery device can be provided.

The Clark patent relates to an automatic valve 100 situated in a conduit 10. A body 104 of the valve includes a spring 109 and a piston 112 for regulating fluid flow.

The Chow patent relates to a microfluidic system having a series of channels 110, 112, 114 and 116 fabricated into a substrate 102 (see Figure 1). Reservoirs 104, 106 and 108 are fluidly connected to channels 114, 116 and 110, respectively.

In contrast to Claim 1 of Applicants' invention, however, neither Clark nor Chow teach or suggest a fluid delivery device that includes, among other features, a flow channel having first, second, third and fourth flow channels and first and second valves formed in the flow channels. As claimed, each valve has a layer and controls the flow of fluid in the flow channels by elastically deforming the layer on the substrate.

Accordingly, it is submitted that Clark and Chow, whether taken individually or in combination with each other, fail to teach or suggest Applicants' claimed invention, and thus reconsideration and withdrawal of the rejections under 35 U.S.C. § 102 and §103 are respectfully requested.

Thus, it is submitted that Applicants' invention as set forth in independent Claim 1 is patentable over the cited art. In addition, dependent Claims 4-8 and 17 set forth additional features of Applicants' invention. Independent consideration of the dependent claims is respectfully requested.

In view of the foregoing, reconsideration and allowance of this application is deemed to be in order and such action is respectfully requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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